## ABSTRACT

A confocal interferometry system for making interferometric measurements of an object, the system including an array of pinholes positioned to receive a source beam and, for each pinhole in the array of pinholes, separate the source beam into a corresponding reference beam on one side of the array of pinholes and a corresponding measurement beam on the other side of the array of pinholes; a first imaging system arranged to image the array of pinholes onto an array of spots on or in the object so that the corresponding measurement beam for each pinhole of the array of pinholes is directed to a different corresponding spot of the array of spots and produces for that spot a corresponding return measurement beam, the first imaging system also arranged to image the array of spots onto the array of pinholes so that the corresponding return measurement beam from each spot of the array of spots is directed back to a corresponding different pinhole in the array of pinholes, wherein for each pinhole the pinhole array combines the return measurement and reference beams for that pinhole to produce a corresponding combined beam; and a detector assembly including an array of detector elements aligned with the array of pinholes so that the corresponding combined beam for each pinhole is directed to different corresponding detector element of the array of detector elements.